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SCULLY SCOTT MURPHY & PRESSER, PC  
400 GARDEN CITY PLAZA  
SUITE 300  
GARDEN CITY, NY 11530

EXAMINER

WOZNIAK, JAMES S

ART. UNIT

PAPER NUMBER

2655

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/823,052

**Applicant(s)**

AGICHTEN ET AL.

**Examiner**

James S. Wozniak

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 61-87 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 61-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. In response to the office action from 10/29/2004, the applicant has submitted an amendment, filed 4/29/2005, canceling Claims 1-60, while adding claims 61-87 and arguing to traverse the art rejection based on the limitations regarding the generation of candidate query transformations from a collection of question-answer pairs and comparing the transformations by executing the queries on the actual information retrieval system using the candidate transformations (*Amendment, Pages 10-11*). Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

### *Response to Arguments*

2. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claims 61 and 79**, the applicant argues that Kupiec (U.S. Patent: 5,696,962) fails to teach generating candidate query transformations from a collection of question-answer pairs (*Amendment, Page 10*). The examiner notes that Kupiec teaches a system that generates candidate result pairs from storage, which is a transformation of an original question inputted by a user (*Col. 22, Line 64- Col. 24, Line 15*). The result pairs taught by

Kupiec are in the form of a query and appropriate documents containing query answers, and thus, can be considered question-answer pairs.

The applicant also argues that Kupiec fails to teach evaluating candidate query transformations by executing queries on the actual information retrieval system using the candidate query transformations (*Amendment, Page 11*). The examiner notes that Kupiec teaches ranking various result pairs by using an information retrieval system (*Col. 22, Line 64-Col. 24, Line 58*). The result rankings are based upon executed queries, which consist of initial and reformulated queries (*Col. 22, Lines 64-35*) compared with the number of hits within an answer of a question-answer result pair. Thus, Kupiec evaluates the performance of each candidate result pairs by executing queries on the actual information retrieval system using the candidate query transformations (result pairs).

The examiner notes that a claim amendment clarifying the input of a natural language question from a user and generating a candidate query transformation of a natural language question by generating candidate query transformations for each question type from a collection..., may overcome the prior art of record. As the invention is currently claimed, there is no link between a natural language question entered by a user and candidate query transformations relating to the initial natural language question, having a question type and entered by a user into a search engine.

The dependent claims are argued as further limiting rejected independent claims, and thus, are also rejected.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 61-63, 75, and 77-83** are rejected under 35 U.S.C. 102(b) as being anticipated by Kupiec (*U.S. Patent: 5,696,962*).

With respect to **Claim 61**, Kupiec discloses:

Classifying question into a plurality of question types (*type phrase, Col. 5, Lines 15-24, and Col. 29, Lines 19-53*);

Generating candidate query transformations for each question type from a collection of question-answer pairs, wherein the candidate query transformation for a question type is automatically derived from the answers associated with the questions in the question-answer pairs which match the question type (*generating a processed list of result pairs from storage corresponding to an input question type that indicates the nature of an answer, Col. 22, Line 64-Col. 24, Line 15; Col. 5, Lines 15-24; Col. 35, Line 59- Col. 36, Line 15*);

Evaluating performance of the generated candidate query transformations by executing the information retrieval system using queries formulated by applying the candidate query transformations to the questions in the question-answer pairs and comparing results from the information retrieval system to the answers in the question-answer pairs (*generating result pairs*

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*from a query and ranking search results from an information retrieval system by comparing a document (answer) to a number of hits related to a query, Col. 22, Line 64- Col. 24, Line 15).*

Selecting for the information retrieval system one or more candidate query transformations for each question based on the evaluation of the performance of the candidate query transformations *(ordered list from which a user can select a result pair according to a relevance ranking, Col. 25, Line 20-65).*

With respect to **Claim 62**, Kupiec teaches different result pairs produced for different queries *(Col. 23, Line 60- Col. 24, Line 15)*. Also, it would be inherent that different IR systems would produce different result pairs for selection, since the result pairs are based on available documents in an IR system *(Col. 23, Line 35- Col. 24, Line 15)*.

With respect to **Claim 63**, Kupiec teaches replacing a query with a result pair which contains an answer word *(Col. 22, Line 64- Col. 24, Line 15)*.

With respect to **Claim 75**, Kupiec teaches query expansion and weighted ranking of result pairs *(Col. 22, Line 64- Col. 24, Line 44)*.

With respect to **Claim 77**, Kupiec teaches determining a question type from a query phrase that is utilized in a result pair *(Col. 5, Lines 15-24)*.

With respect to **Claim 78**, Kupiec teaches computing the n-gram frequency of a noun phrase that determines a question type and is located in the result pairs *(Col. 13, Lines 1-25; Col. 5, Lines 15-24; Col. 23, Lines 36-60)*.

**Claim 79** contains subject matter similar to Claim 61, and thus, is rejected for the same reasons.

With respect to **Claim 80**, Kupiec teaches generating an alternative query in which an answer hypothesis is utilized (*Col. 32, Lines 23-36*).

With respect to **Claim 81**, Kupiec teaches treating a query as a noun phrase (*Col. 5, Lines 15-24*).

With respect to **Claim 82**, Kupiec teaches a means for generating result pairs from a query and ranking search results from an information retrieval system by comparing a document (answer) to a number of hits related to a query (*Col. 22, Line 64- Col. 24, Line 15*).

With respect to **Claim 83**, Kupiec teaches weighting based upon proper nouns and title phrases (*Col. 24, Lines 16-44*).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 64-66 and 68-71** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Bradford (*U.S. Patent: 6,678,679*).

With respect to **Claim 64**, Kupiec teaches the query processing system as applied to Claim 61. Kupiec does not specifically teach a means for filtering query terms, however Bradford discloses such a means (*Col. 6, Line 46- Col. 7, Line 5*).

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Kupiec and Bradford are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Kupiec with the means for filtering a query prior to executing an information retrieval system as taught by Bradford to produce final results in order to improve the relevancy of search results (*Bradford, Col. 4, Lines 25-30*).

With respect to **Claim 65**, Kupiec teaches a means for candidate weighting (*Col. 24, Lines 36-44*).

With respect to **Claim 66**, Kupiec teaches weighting based upon proper nouns and title phrases (*Col. 24, Lines 16-44*).

With respect to **Claim 68**, Kupiec further discloses:

The filtering of the candidate query transformations chooses candidate query transformations with a highest selection weight, the selection weights computed for each candidate query transformation based on co-occurrence statistics and on the term weights (*Col. 34, Lines 1-9; Col. 31, Lines 1-10*).

**Claim 69** contains subject matter similar to Claim 65, and thus, is rejected for the same reasons.

With respect to **Claim 70**, Kupiec discloses:

Sorting the initial candidate transforms into buckets according to the number of words in the transform phrase (*grouping and ranking result pairs according to the number of title words, Col. 24, Lines 35-44, and the determination of the most relevant result pairs for a presentation list, Col. 25, Lines 20-33*).



With respect to **Claim 71**, Bradford teaches the method of search term filtering in which words that indicate the content of a query are discarded as applied to Claim 64.

7. **Claim 67** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Bradford, and further in view of Robertson et al ("*Relevance weighting of Search Terms*," 1976).

With respect to **Claim 67**, Kupiec in view of Bradford teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 65. Kupiec does not specifically suggest the use of an equation similar to that in Claim 67 to calculate term weighting, however Robertson et al teaches such an equation (*weighting function, Page 130, and further derivation using the document relevance table on Page 135*).

Kupiec, Bradford, and Robertson are analogous art because they are from a similar field of endeavor in document retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modifying the teachings of Kupiec in view of Bradford with the equation for calculating term weighting as taught by Robertson in order to provide a specific means of improving document retrieval accuracy and, in turn, retrieval performance (*Robertson, Page 129, Col. 2 –130, Col. 1*).

8. **Claims 72-74 and 84-86** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Brewster et al (*U.S. Patent: 6,070,133*).

With respect to **Claims 72 and 84**, Kupiec teaches the query processing system as applied to Claims 61 and 83. Kupiec does not specifically teach a ranking process that involves generating sub-documents, however Brewster discloses such a process (*Col. 3, Lines 13-49*).

Kupiec and Brewster are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Kupiec with the subdocument generation means taught by Brewster, in order to provide visual document summaries without having to read an entire document (*Brewster, Col. 3, Lines 43-49*).

With respect to **Claims 73 and 85**, Brewster further teaches a process of overlapping window partitioning (*Col. 6, Lines 17-43*).

With respect to **Claims 74 and 86**, Kupiec teaches the means for ranking queries according a number of hits within a document, as applied to Claim 61, while Brewster teaches the method of generating a subdocument as applied to Claim 84.

9. **Claim 76** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Pedersen et al (*U.S. Patent: 5,442,778*).

With respect to **Claim 76**, Kupiec teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 75. Kupiec does not teach averaging the similarity of documents, however Pedersen teaches such an average similarity (*Col. 5, Lines 24-41*).

Kupiec and Pedersen are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill

in the art, at the time of invention, to modify the teachings of Kupiec with the use of average document similarity in order to enhance searching techniques (*Pedersen, Col. 5, Lines 24-27*).

10. **Claim 87** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Brewster et al, and further in view of Pedersen et al.

With respect to **Claim 87**, Kupiec in view of Brewster teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 86. Kupiec in view of Brewster does not teach averaging the similarity of documents, however Pedersen teaches such an average similarity (*Col. 5, Lines 24-41*).

Kupiec, Brewster, and Pedersen are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Kupiec in view of Brewster with the use of average document similarity in order to enhance searching techniques (*Pedersen, Col. 5, Lines 24-27*).

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Bennett et al (*U.S. Patent: 6,615,172*)- teaches a method for forming candidate queries relating to a user's question.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached at (571) 272-7582. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak

7/11/2005

  
SUSAN MCFADDEN  
PRIMARY EXAMINER